

**Version of Amended Claims
with Markings to Show Changes Made
Corresponding to 37 CFR §1.121(c)(ii)**

1(Twice Amended). A method of reducing absorption into a laminated material used for the manufacture of containers having [flexible] walls and which in use has an intended inner surface and a [vapor impermeable non-polyolefin] core barrier layer, said method comprising arranging for at least one further layer, formed from a non-polar thermoplastic polyolefin resin filled with a platelet filler comprising talc, to be positioned inwardly of the barrier layer, said core barrier layer consisting essentially of a vapor impermeable non-polyolefin and having a thickness of less than 25 microns.

6(Twice Amended). A laminated material for the manufacture of a container having [flexible] walls and which, in use, has a surface intended to be external of the container and a surface intended to be internal of the container, the laminated material comprising an intermediate [non-polyolefin] barrier layer consisting essentially of a non-polyolefin thermoplastic material having, on its inner side, at least one further layer comprising a non-polar thermoplastic polyolefin resin filled with a platelet filler comprising talc, said barrier layer having a thickness of less than 25 microns.

15(Twice Amended). A container [having flexible] comprising walls formed from a laminated material having a core barrier layer consisting essentially of a non-polyolefin thermoplastic material with at least one further layer arranged internally of the barrier layer, said one further layer comprising a non-polar thermoplastic polyolefin resin filled with platelets of talc having an aspect ratio of at least 5 and an average aspect ratio of from 16 to

30, and wherein the one further layer has a CIE whiteness of at least 40 and said barrier layer
has a thickness of less than 25 microns.

REMARKS

Claims 1, 2, 5-7, 12, and 15-35 are pending. Independent claims 1, 6 and 15 have been amended to set forth with greater particularity the novel and patentable subject matter of the present invention. No new matter was added. It is submitted that all the claims distinguish in a patentable manner over the prior art cited by the Examiner. Accordingly, a notice of allowance is respectfully requested.

I. Applicants' Response to Advisory Action

In the Advisory Action dated February 21, 2002, the Examiner states that:

"... Even if the amendment were to be entered, the amended claim would not overcome the rejection because when an applicant contends that materials in the prior art are excluded by the recitation 'consisting essentially of,' Applicant has the burden of showing that the introduction of the additional components would materially change the characteristics of Applicant's invention. ... Furthermore as stated on page 2 of the previous Action, Sacks et al. teach a layer thickness of 10-25 microns (column 3, lines 16-26)."

A. Applicants Disagree that the Sacks patent discloses the stated thickness

The majority of the disclosure provided by the Sacks patent relates to a single layer film containing 10 to 50 percent by weight of a platelet filler material. Column 3, lines 16-26 of the Sacks discloses a platelet containing single layer polymeric film having a thickness of 10 to 100 microns. This citation discloses nothing relevant to a multi-layer laminate material.

This citation is not relevant to the claims of the present application which are clearly directed to a multi-layer laminated material (claim 6), a container having walls formed of a multi-layer laminated material (claim 15), and a method of reducing the absorbability of a multi-layer laminated material (claim 1).

Reconsideration of this issue is respectfully requested.

B. Significance of a core barrier layer consisting essentially of a non-polyolefin thermoplastic material

The non-polyolefin thermoplastic material is a vapor barrier material. The vapor impermeability provided by a layer of this material is increased by increasing the thickness of the layer, and conversely, the vapor impermeability provided by a layer of this material is reduced by decreasing the thickness of the layer. The significance of reducing the thickness of the non-polyolefin vapor impermeable barrier layer is that this material is extremely expensive in comparison to the other materials utilized in the laminate. Thus, a balance must be struck between economic considerations and functional considerations.

In the present invention, the claimed laminate material provides improved prevention of the loss of flavoring of the contents of the container because it not only restricts permeability, but also restricts absorption of the contents into the walls of the laminate. This is accomplished by the inward placement of the talc-filled polyolefin (ie. HDPE) layer relative to the non-polyolefin barrier layer. This claimed placement is crucial to achieve a reduction in the absorption of the contents of the container into the walls of the laminate material. The use of the inward placed talc-filled polyolefin (ie. HDPE) layer in combination with the non-polyolefin vapor barrier layer permits the non-polyolefin vapor barrier layer to be reduced to less than 25 microns and yet provide the laminate material **as a whole** with low vapor permeability.

Thus, the claimed laminate material as a whole is novel and patentable over the Sacks patent. **The Sacks patent does not disclose the inward placement of the talc-filled polyolefin (ie. HDPE) layer relative to the non-polyolefin barrier layer.** In addition, the Applicants have limited the claims to include a barrier layer consisting essentially of a non-polyolefin thermoplastic material. This barrier layer in combination with the inward placed

talc-filled polyolefin layer provides a desired amount of vapor impermeability while requiring only a very thin layer, less than 25 microns, of barrier material. Thus, the claimed laminate material provides low vapor permeability and yet can be produced economically. Any material added into the barrier layer would clearly effect the overall thickness, cost, and performance of the laminate material.

Reconsideration of the patentability of the claims of the present invention is respectfully requested.

II. Concepts Pertinent to the Present Invention & Arguments:

(1) Permeability is measured in terms of the mass of a substance that passes through a material in a given time.

(2) Absorption is measured in terms of the weight gain of a material within a given time.

(3) Loss of Flavoring of the contents of a container is due to both permeability through the walls of the container and absorption into the walls of the container.

(4) Examples of polyolefin resins according to the present invention include, for instance, HDPE, PE, and PP.

(5) Examples of a non-polyolefin vapor impermeable barrier material include, for instance, EVOH, a polyamide, and aluminum foil.

III. Summary of Independent Claims of the Present Application

Independent claim 1 of the present application is directed to a method of reducing the absorbability of a laminated material by having a talc-filled polyolefin (ie. HDPE) layer located inward (ie. relative to the contents of the container) of a thin vapor/oxygen barrier

layer. The barrier layer consists essentially of a non-polyolefin vapor impermeable material (ie. a polyamide material) and is less than 25 microns in thickness. Since the barrier layer “consists essentially of” a non-polyolefin vapor impermeable material, it clearly does not contain talc or other filler material.

Independent claims 6 and 15 include similar limitations and are directed to a laminate material and container, respectively.

The inward placement of the talc-filled polyolefin (ie. HDPE) layer is crucial to achieve a reduction in the absorption of the contents of the container into the walls of the laminate material. It also permits the thickness of the non-polyolefin vapor impermeable material to be reduced to less than 25 microns and yet provide the laminate material as a whole with low vapor permeability. The significance of reducing the thickness of the non-polyolefin vapor impermeable barrier layer is that this material is extremely expensive in comparison to the other materials utilized in the laminate. Thus, the claimed laminate material provides improved prevention of the loss of flavoring of the contents of the container because it not only restricts permeability, but also restricts absorption of the contents into the walls of the laminate.

IV. 35 USC §102(b) Claim Rejections

In the Office Action, the Examiner rejected claims 1, 5-7, 12, 16, 17, 20-26, 29 and 34 under 35 USC §102(b) as being anticipated in view of U.S. Patent No. 4,528,235 issued to Sacks et al..

A. The Sacks Patent

The primary reference cited by the Examiner is U.S. Patent No. 4,528,235 issued to Sacks et al.. Sacks discloses a polymer film which includes a platelet filler for purposes of decreasing gas and vapor permeability of the film. Importantly, Sacks is silent with respect to absorption of material into the walls of the film and does not recognize the significance of absorption as a cause of loss of flavoring. Thus, Sacks does not address nor attempt to solve the problem to which the present invention is concerned.

The majority of the Sacks patent relates to a single layer film. However, a film laminate is discussed in column 2, lines 17-43; column 3, lines 49-56; and column 6, lines 28-54; and in Examples 25 and 26. These sections of the Sacks patent are provided below, in full:

“The present invention also includes film laminates. The laminates have at least one polymeric layer, preferably high density polyethylene layer or a polyamide such as a polycaprolactam layer, and at least one additional polymeric layer. The at least one layer and preferably the at least one additional layer contain from 10 to 50, preferably 25 to 50, and more preferably 30 to 50 weight percent of a platelet type filler having an average equivalent diameter of about 1 to 8 micrometers, a maximum equivalent diameter of about 25 micrometers, and an average thickness of less than about 0.5 micrometers and preferably from 0.01 to 0.5 and more preferably 0.05 to 0.2 micrometers. The filler is homogeneously distributed through the film and a plane through the major plane of the filler particles is substantially parallel to the plane of the film.

A preferred film laminate has at least one talc filled high density polyethylene layer and at least one talc filled polycaprolactam layer. There can be an adhesive layer between the one layer and the additional layer. The one layer and the additional layer can be of adhesion promoting type polymers such as high amine end terminated polycaprolactam. The layers can contain additives which promote adhesion. For example, high density polyethylene layers can contain oxidized polyethylene to promote adhesion to the polyamide layer.”

...

"The present invention includes a film laminate having at least two layers of the filled polymer film of the present invention. Preferably, the polymer material in one layer and the polymer in at least one additional layer comprise different polymer materials. In this way advantage can be taken of the different gas and vapor permeability properties of diverse polymeric film materials."

...

"The present invention also includes laminates of film containing at least one polymer layer containing the filler of the present invention. Of particular interest are laminates containing different types of polymer layers filled with the platelet type filler used in the present invention. The most preferred films have at least one layer of high density polyethylene and/or one layer of polycaprolactam. A preferred film has a talc filled layer of high density polyethylene and a talc filled layer of polycaprolactam. The laminate can optionally have an adhesive layer such as an ethylene vinyl acetate copolymer modified with anhydride units between the high density polyethylene and polycaprolactam layer. Useful adhesive layers include Plexar.™ modified ethylene vinyl acetate copolymer produced by Chemplex, or CXA/3095 manufactured by DuPont. Alternately, no adhesive layer need be used, and a laminate of polycaprolactam adjacent to high density polyethylene can be made wherein the talc filled high density polyethylene also contains an adhesion promotor such as oxidized polyethylene as disclosed in U.S. Pat. No. 4,322,480 to attain adhesion between a polyamide layer and a polyethylene layer.

It is recognized that in addition to laminates having at least one layer and at least one additional diverse layer of the filled films of the present invention, the laminate can additionally have a variety of nonfilled film layers."

...

"EXAMPLE 25

Films were produced by tubular coextrusion of high density polyethylene-hexene copolymer described in Example 10 containing 29% talc of the type described in Example 1 as the outer layer, an ethylene-vinyl acetate polymer modified with anhydride units as the middle layer (DuPont CXA-3095), and polycaprolactam of the type described in Example 17 containing 30% talc of Example 1 as the inner layer. ..."

...

"EXAMPLE 26

A five layer tubular film was produced using 0.95 density polyethylene of the type described in Comp. 4 having a melt index 0.08 g/10 minutes as measured in accordance with the procedure of Example 1. The polyethylene

was free of talc and contained 2.7% by weight titanium dioxide pigment. This resin was used to form the innermost (layer one) and outermost layer (layer five) of the film. Polycaprolactam resin containing 30% talc of the type described in Example 1 was used to form the middle layer (layer three). Adhesive layers two and four were formed from CXA-3095 modified ethylene-vinyl acetate resin described in Example 25. ...”

B. Patentability Argument

As is evident from the above sections of the Sacks patent, the reference does not disclose all the limitations of the independent claims of the present invention.

The Sacks patent does not disclose that the talc filled polyolefin layer be placed inward (relative to the contents of the container) of the barrier layer. For example, the preferred embodiment of Sacks (see Example 25) includes a laminate having an inner (non-polyolefin) layer of talc filled polycaprolactam and an outer (polyolefin) layer of talc filled HDPE. This embodiment would not reduce absorption as accomplished by the laminate claimed by the present application because the talc filled HDPE (polyolefin) layer disclosed by the Sacks patent is located outside of the polycaprolactam (non-polyolefin) talc-filled layer. **No where in the Sacks patent does it disclose the inward placement of a talc-filled HDPE (polyolefin) layer relative to a non-polyolefin core barrier layer. This placement is required if absorption of a container's contents into the walls of the container is to be restricted.**

The Sacks patent also does not disclose that the barrier layer “consist essentially of” a non-polyolefin resin (ie. EVOH, an amorphous polyamide, aluminum foil or polycaprolactam) without a filler. Rather, the Sacks patent teaches that the layer of polycaprolactam is talc filled (ie., it does not “consist essentially of” polycaprolactam). For instance, see examples 25 and 26 of Sacks patent which require the polycaprolactam layer to be filled with 30% by weight of talc.

In addition, the Sacks patent does not disclose a **multi-layer** laminate material having a non-polyolefin resin core barrier layer with a thickness of **less than** 25 microns.

Thus, the Sacks patent fails to teach the claimed combination recited by the independent claims of the present application. In particular, the Sacks patent fails to disclose: “a non-polar thermoplastic polyolefin resin filled with a platelet filler comprising talc ... **positioned inwardly of the barrier layer** ... said core barrier layer consisting essentially of a vapor impermeable non-polyolefin and having a thickness of less than 25 microns.”

For the above reasons, the Applicants respectfully submit that independent claims 1 and 6 are not anticipated under §102(b) by the Sacks patent. Dependent claims 5,-7, 12, 16, 17, 20-26, 29 and 34 are not anticipated by the Sacks patent for the same reasons.

Accordingly, reconsideration and removal of the §102(b) rejection is requested.

V. 35 USC §103(a) Claim Rejections

In the Office Action, the Examiner rejects claims 2, 18, 19, 27, 28, 30-33 and 35 under 35 USC §103(a) as being obvious in view of U.S. Patent No. 4,528,235 issued to Sacks et al..

Also in the Office Action, the Examiner maintained the rejection of claim 15 under 35 USC §103(a) as being obvious in view of the combination of U.S. Patent No. 4,528,235 issued to Sacks et al. and published European Patent Application No. 275,102 of Newman et al..

A. The Newman reference

The Newman reference relates to a multilayer sheet material for use in making containers for food products to be cooked or reheated in microwave ovens. In contrast to

Sacks, Newman is not concerned with films having an increased resistance to vapor permeability, but rather seeks to provide a thermally stable container which can withstand heat generated inside a microwave oven without a significant loss of dimensional stability.

B. Patentability Argument

As stated previously, neither the Sacks nor Newman patents discloses a container laminate which reduces absorption of a containers' contents into the walls of the laminate.

The applicant has discovered that the absorption properties of a laminated material which includes a non-polyolefin barrier layer (e.g., ethylene vinyl alcohol (EVOH), polyamides, polyacrylonitrile, aliphatic polyketones and aluminum foil) can be affected and improved by the inward placement of a further layer comprising a thermoplastic non-polar polyolefin resin filled with a platelet talc filler.

As stated above, the present invention enables the thickness of the relatively expensive non-polyolefin barrier layer to be reduced, while substantially maintaining a low permeation rate through the laminate. The Applicants have also surprisingly found that the inward location of the layer comprising a thermoplastic non-polar polyolefin resin filled with a platelet talc filler relative to the non-polyolefin barrier layer results in an improvement in absorption properties (ie. less flavoring material of the contained product is absorbed into the walls of the container).

The recited thickness of the barrier layer is not arbitrary. Rather, the thickness of the barrier layer is linked to the feature of the talc-filled polyolefin layer located **inwardly** of the non-polyolefin core barrier layer. This placement enables the barrier layer to be reduced to less than 25 microns. The inward placement of the talc-filled polyolefin layer and the thinned non-polyolefin barrier layer achieves the following results: (a) reduced material and

manufacturing costs; (b) reduced absorbability of contents (ie., toothpaste) into the walls of the laminate; and (c) no increase in permeability.

There is a clear physical distinction between absorbability and permeability. Sacks measures vapor and oxygen passing through a material in a given time. Thus, Sacks is only concerned with permeability. In contrast, the present invention measures the amount of flavoring chemicals absorbed into a material by its weight gain in a given time.

The cited references are silent regarding the problem of decreasing absorbability and do not disclose how to restrict absorbability and maintain a low permeability while reducing the thickness of the expensive non-polyolefin core barrier layer. Further, the cited references provide no motivation to modify their laminate structures as claimed by the present invention because neither teaches anything with respect to reducing the absorption of flavoring chemicals of the contents of the container into the walls of the laminate. The cited references are concerned only with permeability, not absorbability.

For reasons stated above, the Sacks patent and the Newman reference fail to teach the claimed combination recited by the independent claims of the present application. In particular, the references fail to disclose: “a non-polar thermoplastic polyolefin resin filled with a platelet filler comprising talc ... positioned inwardly of the barrier layer ... said core barrier layer consisting essentially of a vapor impermeable non-polyolefin and having a thickness of less than 25 microns.”

Thus, claims 2, 15, 18, 19, 27, 28, 30-33 and 35 are submitted as being patentable over the Sacks patent when taken alone, or when taken in combination with the Newman reference.


Accordingly, reconsideration and removal of the §103(a) rejections are requested.

VI. Conclusion

In view of the amendments and remarks, Applicants respectfully submit that the rejections have been overcome and that the present application is in condition for allowance. Thus, a favorable action on the merits is therefore requested.

Please charge any deficiency or credit any overpayment for entering this Amendment to our deposit account no. 08-3040:

Respectfully submitted,
Howson and Howson
Attorneys for Applicants

By 
William Bak
Reg. No. 37,277
Spring House Corporate Center
Box 457
Spring House, PA 19477
(215) 540-9216